REMARKS

Upon entry of this amendment, claims 1, 4, 8, 10, 12, 16-19, 22, 24, 27, 35 and 49 are pending. Claims 2-3, 5-7, 9, 11, 13-15, 20-21, 23, 25-29, 28-34, and 36-48 have been canceled. Claims 1, 4, 8, 12, 16-19, 22, 24, 27 and 35 have been amended herein and new claim 49 has been added. Support for these amendments can be found at, *e.g.*, page 4, lines 12-16; page 6, lines 21-23; page 9, lines 7-14; page 12, lines 26-28; and as-filed claim 5. Support for new claim 49 can be found at, *e.g.*, page 4, lines 10-11; page 11, lines 4-6; page 12, lines 12-14; and as-filed claim 1. Thus, no new matter has been added.

Claim Rejections -- 35 U.S.C. § 112

Claims 5, 6, and 14 are rejected as indefinite. Claims 5, 6, and 14 have been canceled herein. Therefore, this rejection is moot and should be withdrawn.

Claim Rejections -- 35 U.S.C. §§ 102 and 103

Claims 1-5, 8-13, and 35-36 are rejected as anticipated by U.S. Patent No. 5,532,215 ("Lezdey"). Claims 5, 9, 11, 13 and 36 have been canceled herein. Therefore, this rejection is moot as it applies to these claims. Applicants traverse the rejection with respect to the remaining claims.

As amended, these claims specify the use of an antithrombin which is selected from 43 kDa modified antithrombin, R-antithrombin, S-antithrombin, pre-latent antithrombin, a variant thereof, an analog thereof, or a combination thereof. Although Lezdey notes that "[s]erpins include alpha 1-antitrypsin inhibitor, alpha 1-antichymotrypsin, antithrombin, C 1-inhibitor, alpha 2-antiplasmin and Protein C-inhibitor" (Lezdey at col. 3, lines 39-41), Lezdey does not teach or suggest any specific antithrombins that are effective in inhibiting HIV proliferation.

The Examiner states that "Lezdey teaches a method for inhibiting HIV proliferation by inhibiting viral replication or killing the viruses on contact via human serine protease inhibitors such as alpha 1-antitrypsin (AAT) and antithrombin." (Office action, page 3). As noted, Applicants have amended independent claims 1, 8, 19, 24 and 35 to specificy a method of inhibiting the infectivity of HIV or treating HIV infection using an antithrombin III selected from a 43 kDa modified antithrombin, R-antithrombin, S-antithrombin, pre-latent antithrombin,

a variant thereof, an analog thereof, or a combination thereof. Lezdey does not teach the use of any of these antithrombins to inhibit the infectivity of HIV or treat HIV infection. Rather, Lezdey recites specific serine protease inhibitors can be used according to the methods of that invention. (See,Col. 5, lines 17-25). This list does not include antithrombin.

Thus, since Lezdey does not teach all the elements of claims 1-4, 8, 10, 12 and 35, Applicants contend that these claims are novel. Thus, this rejection should be withdrawn.

Claims 1-18, 35 and 36 are rejected under 35 U.S.C. § 102(a), or, alternatively, under 35 U.S.C. § 103(a), over WO 00/52034 ("Shapiro"). Claims 2, 3, 5-7, 9, 11, 13-15 and 36 have been canceled herein. Therefore, this rejection is moot as it applies to these claims. Applicants traverse the rejection with respect to the remaining claims as amended herein.

The Examiner states that "Shapiro teaches methods of inhibiting viral infection (HIV) by administering compounds having serine protease inhibitory or serpin activity (abstract). Shapiro teachs that alpha-1-antitrypsin (AAT) and thrombin have serpin activity." (Office Action at page 4). As noted, the pending claims have been amended herein to require an antithrombin that is selected from the group consisting of 43 kDa modified antithrombin, R-antithrombin, S-antithrombin, or pre-latent antithrombin, a variant thereof, an analog thereof, or a combination thereof. Shapiro does not teach or suggest the use of the specific antithrombins recited in the pending claims (as amended herein).

Therefore, these claims are not anticipated by or obvious in view of Shapiro, since Shapiro does not teach or suggest all the elements of the pending claims. Thus, this rejection should be withdrawn.

Claims 19-28 are rejected under 35 U.S.C. § 103(a) as obvious over Lezdey or Shapiro in view of WO 96/10639 ("Hopkins"). Claims 20-21, 23, 25-26 and 28 have been canceled herein. Therefore, this rejection is moot as it applies to these claims. Applicants traverse the rejection with respect to the remaining claims as amended herein.

Hopkins does nothing to cure the deficiencies of Lezdey and Shapiro. Hopkins teaches the expression of a modified alpha 1-antitrypsin (AAT) polypeptide that contains a region of an antithrombin III polypeptide, such as the reactive loop, which have antithrombotic and/or anticoagulant activity. (See Hopkins, Abstract, page 1, and claim 3). Hopkins does not teach or

suggest the use of the specific antithrombins recited in the pending claims for inhibition of HIV infectivity.

Moreover, Applicants believe that there would be no motivation for one of ordinary skill to combine these references. Hopkins teaches the use of antithrombin-containing compositions as antithrombotics or anti-coagulant agents, not as antivirals. Therefore, one of ordinary skill in the art would not be motivated to combine Hopkins with the teachings of Lezdey and Shapiro.

Thus, for these two reasons, the claimed invention is not obvious over Lezdey or Shapiro in view of Hopkins. Therefore, this rejection should be withdrawn.

CONCLUSION

Based on the instant amendments and remarks, Applicants submit that this application is in condition for allowance and such action is respectfully requested. Should any questions or issues arise concerning the application, the Examiner is encouraged to contact Applicants' undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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